Site Management Plan
Remedial Investigation/Feasibility Study
Falcon Refinery Superfund Site
Ingleside, San Patricio County, Texas
EPA Identification No. TXD086278058

EPA Region 6 Remedial Action Contract 2
Contract: EP-W-06-004
Task Order: 0088-RICO-06MC

Prepared for

U.S. Environmental Protection Agency
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1. INTRODUCTION

EA Engineering, Science, and Technology, Inc. (EA) has been authorized by the U.S. Environmental Protection Agency (EPA), under Remedial Action Contract Number EP-W-06-004, Task Order 0088-RICO-06MC, to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Falcon Refinery Superfund Site (site). EA has prepared this Site Management Plan (SMP) in accordance with:

(1) Specifications provided in the EPA Statement of Work (SOW) (Revision 00), dated 03 February 2012 (EPA 2012)

(2) EPA-approved Work Plan and Cost Estimate (Revision 01), dated 24 April 2012 (EA 2012a).

The SMP addresses site access, security, pollution control, contingency procedures, management responsibilities, data management, air quality monitoring, and waste disposal; the SMP also contains the Pollution Control and Mitigation Plan (PCMP) and the Contingency Plan (CP). The SMP will be used in conjunction with the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP). The FSP details the field sampling schedule, rationales for sample selection, and sampling methods required to perform an RI/FS. The QAPP documents the planning, implementation, and assessment procedures, as well as specific quality assurance (QA) and quality control (QC) activities. Together, the SMP, FSP, and QAPP present the overall approach for implementing the RI/FS field program.

EA has incorporated the following site-specific plans into the SMP:

- PCMP
  - — Appendix A includes the PCMP, which outlines the process, procedures, and safeguards that will be used to ensure contaminants or pollutants are not released offsite during the implementation of the investigation.
- CP
  - — Section 5 of this SMP and Sections 3 and 5 of the PCMP (Appendix A) address emergency procedures/contacts in the event a release of contaminants were to occur (or is discovered), and/or if other emergencies, such as fires or inclement weather conditions occur during the implementation of RI field activities.
  - — Section 6 of the Health and Safety Plan (HSP; EA 2012b) also describes emergency recognition, pre-emergency planning, and procedures for handling emergency incidents, and emergency contact information and responsibilities.
- Waste Management Plan (WMP)
  - — Section 6 of this SMP and Section 4 of the PCMP (Appendix A) address management, transportation, and disposal of wastes resulting from RI field activities.

- Data Management Plan (DMP)
  - — Appendix B includes the DMP, which outlines the procedures for storing, handling, accessing, and securing data collected during the RI.
- Air Quality Monitoring Plan (AQMP)
  - — Appendix C outlines the air monitoring procedures and protocols for protecting workers during RI field activities. It is supported by the HSP (EA 2012b), which specifies employee training, protective equipment, personal air monitoring procedures, medical surveillance requirements, standard operating procedures, and contingency planning procedures.

The EPA Region 6 Task Order Monitor (TOM), Mr. Rafael Casanova, is responsible for project oversight. The Project Officer for EPA Region 6 is Ms. Rena McClurg. The Contracting Officer for EPA Region 6 is Mr. Michael Pheeny. The EA Project Manager (PM), Mr. Robert Owens, is responsible for implementing activities required by this Task Order. The EA QA Officer David Santoro serves as independent evaluator of the data collection process.

1.1 SITE BACKGROUND AND DESCRIPTION

The site is located 1.7 miles southeast of State Highway 361 on FM 2725 at the north and south corners of the intersection of FM 2725 and Bishop Road near the City of Ingleside in San Patricio County, Texas (Figure 1). The site occupies approximately 104 acres and consists of a refinery that operates intermittently and is currently inactive, except for a crude oil storage operation being conducted by Superior Crude Gathering, Inc. (Superior). Figure 2 provides the current layout of the site. When in operation the refinery had a capacity of 40,000 barrels per day and the primary products consisted of naphtha, jet fuel, kerosene, diesel, and fuel oil. The refinery also historically transferred and stored vinyl acetate, a substance not excluded under the petroleum exclusion.

Surface water drainage from the site enters the wetlands along the southeastern section of the abandoned refinery. The wetlands connect to the Intracoastal Waterway and Redfish Bay, which connects Corpus Christi Bay to the Gulf of Mexico. The site is bordered by wetlands to the northeast and southeast, residential areas to the north and northwest, Plains Marketing L.P. (a crude oil storage facility) to the north, and several construction companies to the west and south. Other portions of the site include above-ground and buried piping leading from the site to dock facilities, owned by National Oil Recovery Corporation (NORCO), at Redfish Bay.

1.2 PURPOSE OF THE INVESTIGATION

The purpose of this investigation is to collect ground water, surface water, surface soils, sediment, and other data to support a RI/FS. The RI/FS process will allow the EPA to select a remedy that eliminates, reduces, or controls risks to human health and the environment. The goal is to develop the minimum amount of data necessary to support a Record of Decision. The EPA RI/FS SOW (EPA 2012) and EPA-approved Work Plan (EA 2012a) set forth the framework and requirements for this effort.

The following sections discuss site security (Section 2), site access (Section 3), health and safety (Section 4), contingency procedures (Section 5), waste disposal (Section 6), management responsibilities (Section 7), document management (Section 8), project meetings (Section 9), and audit procedures (Section 10).

2. SITE SECURITY

The Support Zone for field management and sample processing/analysis will be situated near the area of investigation. Storable tools, instruments, and equipment will be collected at the end of the shift or workday, and will be either taken offsite for storage or stored within the Support Zone in a secured storage unit.

The Site Manager (SM), the Site Health and Safety Officer (SHSO), or an appropriate designee will be responsible for controlling unauthorized entry during work hours. Should persons attempt unauthorized site entry, the SM will be responsible for taking appropriate action.

A Daily Site Log will also be kept for all personnel visiting the site. The log will include: (1) date of each person's visit to the site; (2) person's name, signature, and organization; and (3) time of site entry and exit. A sample Daily Site Log is included in Appendix B to the HSP. Any visitors to the site must present proper identification and be authorized to be onsite. Visitors must comply with all provisions of the HSP. The SHSO will identify work areas that visitors or personnel are authorized to enter and will enforce site control measures.

The principal objectives of site security are summarized below:

- Deter, restrict, and control financial losses (as applicable) to the government and the contractor(s), which would include prevention, detection, and reporting of theft, vandalism, sabotage, etc.
- Keep unauthorized people from entering the site and being injured or exposed to hazardous conditions and waste
- Keep unauthorized people from entering the site and removing mechanical or monitoring equipment, small tools, fuel, and stored site material, and from releasing hazardous substances onsite or offsite
- Keep unauthorized people from taking action(s) at the site that might exacerbate the environmental problem or interfere with investigation activities
- Keep unauthorized people from removing file information located onsite
- Prevent unauthorized dumping onsite.

Due to the proximity to the border, EA sample teams will consist of two or more persons. No persons will be allowed to work alone on the site. No work will occur during night time hours and all persons will be offsite before dark.

3. SITE ACCESS

The RI field activities will be performed on private and public property in and around the Falcon Refinery site in Ingleside, Texas. EA will support the EPA TOM in conducting community involvement activities as directed by the EPA TOM. EPA and EA will coordinate to provide access agreements for the properties that are subject to investigation. No in-field project activities will be performed without proper site access agreements.

4. HEALTH AND SAFETY

All personnel performing field activities at the site will be trained in appropriate safety procedures as set forth in the Titles 29 and 40 of the Code of Federal Regulations (CFR), specifically 40 CFR Part 265.16, 29 CFR Part 1910, and 29 CFR Part 1926. During non-intrusive activities, non-trained personnel will be allowed onsite. These personnel may be restricted to certain areas of the site. The regulations in 29 CFR have been enacted to ensure a safe working environment for the United States labor force. In addition, medical monitoring will be required for personnel who will come into close contact with contaminated soils. The HSP provides more specific health and safety information for the project (EA 2012b).

All onsite personnel will be informed of the possible dangers and long-term hazards present at the site in compliance with right-to-know laws.

5. CONTINGENCY PROCEDURES

The potential does exist for a spill of waste materials (e.g., decontamination water and/or soil samples) to occur during the handling of these materials, which could result in an operational emergency. In addition, potential natural emergencies include storm flooding, fires, high winds, dust storms, and extreme heat/cold.

In the event of a fire, explosion, or accidental material release, the response action will be governed by an evaluation of the severity of the event. The SHSO, or other EA representative, will evaluate the situation. An emergency response action will be taken if the SHSO or other representative determines that an emergency situation exists. Section 3 of the PCMP (Appendix A) provides a discussion of controls for chemical releases, and also lists emergency contact numbers to be used in the event a major release were to occur. Section 5 of the PCMP provides emergency response contacts, and describes emergency procedures to be implemented should an emergency occur.

Storm flooding, fires, and other conditions may warrant evacuation of site personnel and equipment. The HSP provides more specific health and safety information (EA 2012b).

6. WASTE DISPOSAL

Liquid and solid investigation-derived waste (IDW) will be generated during drilling operations, decontamination of sampling equipment and personal protective equipment (PPE), and other ancillary investigatory activities. IDW generated as part of RI activities will be subject to disposal as appropriate.

Liquid and solid IDW generated during the RI field investigation will be managed as separate waste streams, and will be drummed, labeled, stored in a designated waste storage area within the Support Zone, and then sampled. Following receipt of analytical data, a subcontracted waste disposal company will remove and transport the IDW to a proper disposal facility. EA will perform field-generated waste (e.g., IDW) characterization and disposal in accordance with local, State, and Federal regulations.

7. MANAGEMENT RESPONSIBILITIES

Implementation of RI field activities at the site will involve several groups and individuals. This section summarizes the roles and responsibilities of the groups and individuals involved. The HSP provides a detailed description of the health and safety related individuals and their roles in the investigation.

7.1 U.S. ENVIRONMENTAL PROTECTION AGENCY

RI field activities will be conducted in accordance with the EPA RI/FS SOW (EPA 2012) and the EPA-approved RI/FS Work Plan – Revision 01 (EA 2012a). The EPA TOM will communicate directly with the EA PM regarding the project.

7.2 EA PROJECT MANAGER

The EA PM will serve as the point-of-contact for EPA and will be responsible for managing the schedule, tracking project costs, and providing general project management.

7.3 SITE MANAGER

The SM will be responsible for: (1) interfacing with the PM, subcontractors, and site staff; (2) documenting RI progress; (3) providing QA oversight of site staff and subcontractors; and (4) certifying that RI/FS activities are completed in accordance with project plans. The SM will manage the daily activities at the site and will coordinate communications between subcontractor, local emergency response, local government, EPA, and Texas Commission on Environmental Quality personnel as appropriate.

7.4 SITE HEALTH AND SAFETY OFFICER

The SHSO will be responsible for ensuring compliance with the HSP. The SM may also serve as SHSO. The SHSO will also be responsible for providing technical coordination of the health and safety program. The SHSO will be appointed and employed by EA and will be responsible for site implementation and enforcement of the HSP as well as any contingency procedures. The SHSO will have advanced field work experience and will be familiar with health and safety requirements specific to the project. The SHSO will ensure that the safety meeting sign-off sheet is signed by all personnel who are to perform field work. The SHSO also must ensure that each field worker signs a daily site log before entering and leaving the site. The SHSO will designate areas/field personnel requiring air monitoring.

The SHSO will be the liaison with the officers and representatives of EPA on matters relating to health and safety. The SHSO will be responsible for maintaining up-to-date records of HSP-related documentation and HSP participants. HSP-related documentation will include training records for each worker relevant to his or her job. Project employees who do not meet HSP requirements will not be allowed to conduct field work.

7.5 QUALITY ASSURANCE OFFICER

The EA QA Officer will be responsible for conducting audits and reviews of all work performed. The QA Officer issues recommendations to the technical staff and management about quality performance. The QA Officer will also provide recommendations and orders, as required, for corrective action for all aspects of work that do not meet EA and EPA standards. The QA Officer or his designee, will confirm compliance with corrective action orders and recommendations.

8. DOCUMENT MANAGEMENT

This section provides the project filing requirements.

8.1 DOCUMENT CONTROL

EA has implemented control procedures for project documents prepared by EA, team subcontractors, non-team subcontractors, and vendors. Project documents will be stored in dedicated project files, to be maintained in central, lockable filing cabinets in the office in which the project is managed, rather than project staff members' individual offices, in order to provide control and confidentiality of documents and reports. Quality records and related documents will be stored in a dedicated section of the project file.

Each project file will contain a master list of documents, indexed to the appropriate file section. Each draft or obsolete document will be discarded or destroyed after the final or next revised draft version is completed.

Documents will be available for use by appropriate members of the project team, but return of project documents to the central file will be required when active use is no longer required. Prior to removing a document from the file, project personnel will be required to fill out a sign-out sheet, indicating the document name, employee's name, and date signed in and out.

8.2 DOCUMENT DISTRIBUTION

In general, documents will be distributed as needed to project personnel. For project-related documents, the PM will distribute technical procedures, drawings, and specifications. The PM will distribute this SMP and any revisions to this plan to project team members.

8.3 DOCUMENT STATUS

To prevent inadvertent use of obsolete or superseded project-related information, members of the SM's project team are responsible for reporting document changes to the PM. The PM will coordinate with other management team members by notifying project personnel of changes in project document status. Outdated material will be purged to prevent further use.

8.4 DOCUMENT FILING AND MAINTENANCE PROCEDURES

Home office filing procedures will be consistent with the procedures established under EA's Quality Management Plan (EA 2012c). Duplicate files regarding site-related work will be maintained at the site under the SM's control. At a minimum, one copy of the following documentation will be maintained at the site:

- Health and safety records
- QA records
- Project plans, including the HSP, SAP, and this SMP
- Copies of pertinent correspondence
- Data collected as part of RI activities.

In addition, relevant regulatory requirements and information (e.g., EPA-issued documents) will be maintained at all times. At least once per week, file information generated onsite and copies of electronic data will be copied or placed on compact disc for transmittal to the PM's home office. The official EPA project file will be maintained at the PM's home office. At the completion of the project, onsite file information, including electronic data, will be transferred to the PM's home office.

8.5 DEVIATION PROCEDURES

Deviations from EPA-approved plans are common during an RI field program. Change does not imply nonconformance, but instead means that original plans must be altered because of new information or events that occur during the work. Changes may have no effect on the final work product or may require redirection of the work so that a different result becomes necessary, as long as the end product is consistent with the EPA-approved Work Plan (EA 2012a) and site-specific plans.

Changes must be documented, evaluated, and reported to project management personnel. Change management ensures that the actual course of the project, not the original plan, can be demonstrated and justified. Project personnel will be responsible for recording changes and providing documentation to project management, QA, or subcontractor management personnel. In addition, the PM will be notified of potential changes that could cause the SM to redirect the work effort. Discussions of deviations to the SAP or other site-specific plans will be recorded in the field logbook.

Contract Field Change Forms (Appendix D) are the mechanisms by which changes to the EPA-approved Work Plan and/or EPA SOW are documented. The EPA Contracting Officer (Mr. Michael Pheeny) will be immediately informed of any scope, schedule, or budget implications. When the EA PM identifies a variance in activities from the approved Work Plan, such as a change in scope, cost, or schedule, the EA PM will notify the EA Program Managerand Financial Manager, and EPA TOM. The EA PM will then complete and submit a Contract Field Change Form to the EA Program Manager and Financial Manager for transmittal to the EPA Contracting Officer. The Contract Field Change Form process is not complete until the Task Order budget has been adjusted, if necessary, and EPA has approved or disapproved the Contract Field Change Form. No work associated with the change will proceed without a properly executed and signed Contract Field Change Form.

9. PROJECT MEETINGS

The project will require planned public and/or open house meetings during RI/FS activities. EA will provide support to the EPA in preparing and conducting these meetings. Additionally, EA will conduct an onsite investigation/kickoff meeting and periodic project meetings. This section discusses attendance requirements and topics for these meetings.

9.1 INVESTIGATION/KICKOFF MEETING

The PM will schedule and conduct a meeting during initial mobilization and performance of field activities. The PM, SM, SHSO, and other appropriate personnel will attend the meeting. Minimum agenda items that attendees must be prepared to discuss include the following:

- Introduction of representatives and their respective roles
- Overview of proposed field work, and methodologies/procedures for gathering data

- Tentative schedule
- Relation and coordination of subcontractors, as required
- Adequacy and distribution of contract documents
- Procedures for maintaining records
- Use of project premises
- Requirements for PPE and health and safety requirements.

9.2 PERIODIC MEETINGS

For the duration of site activities, the SM will schedule and conduct periodic progress meetings at the site. The SM, who is responsible for maintaining accurate meeting minutes, will chair the meeting. The SM will be responsible for distributing the meeting minutes to attendees and program management personnel. The PM, SM, SHSO, and other appropriate personnel will attend the meeting. Minimum agenda items that attendees must be prepared to discuss include the following:

- Review of work progress since the last meeting
- Site observations, problems, and decisions
- Problems that may impede planned progress
- Safety-related observations, incidents, or potential safety problems and the corrective action(s) taken to mitigate the problem(s)
- Corrective measures and procedures to regain the planned schedule, if required
- Work scheduled for the next work period.

10. AUDIT PROCEDURES

Audits ensure that the work is performed accurately, safely, and within contract and schedule constraints. This section discusses site audits, site audit reports, and health and safety audits.

10.1 SITE AUDITS

A site audit may be performed by the QA/QC manager or his designee as necessary during the course of the project to observe general conformance with project requirements. The scope of site audit is summarized below:

- During the site audit, only general visual observations and file reviews will be performed
- Not every element and component indicated in the RI plans will be observed during the site audit.

10.2 SITE AUDIT REPORTS

A written report documenting each site audit will be prepared for the project file; the PM, SM, and relevant subcontractor management personnel will receive copies. The report should include the following information:

- Reason for the audit
  - Fulfill contract requirements,
  - Conduct a planned general observation visit,
  - Resolve an error or omission
  - Resolve a problem
- Date and time of the audit
- Weather conditions during the audit
- Individuals present during the audit
- Work processes observed, such as site or office work
- Specific conditions observed
- Specific conditions resolved or discussed during the audit
- Site conditions that require future investigation and resolution
- Corrective action, if any, forwarded to the subcontractors through the PM and SM
- Photographs taken, if any
- Follow-up actions, if required
  - Identification of the party responsible for the action
  - Timeframe and schedule to complete the action.

10.3 SAFETY AND HEALTH AUDITS

A health and safety audit may be performed during RI field activities. Additional health and safety audits may be arranged with the PM and SM under the following conditions:

- Significant deficiencies are noted during the initial audit
- Lost-time accident occurs onsite
- Project management determines that an additional audit is necessary.

11. REFERENCES

EA Engineering, Science, and Technology, Inc. (EA). 2012a. Remedial Investigation/Feasibility Study Work Plan and Cost Estimate for Falcon Refinery, San Patricio County, Texas, Revision 01. 24 April.

———. 2012b. Health and Safety Plan, Remedial Investigation/Feasibility of Falcon Refinery Superfund Site, Ingleside, San Patricio County, Texas. October

———. 2012c. Quality Management Plan for EPA Region 6 Remedial Action Contract 2 Full Service. 9 July.

U.S. Environmental Protection Agency (EPA). 2012. RAC II Statement of Work for Remedial Investigation/Feasibility Study (RI/FS), Falcon Refinery Superfund Site, San Patricio County, Texas. 3 February.

Figures

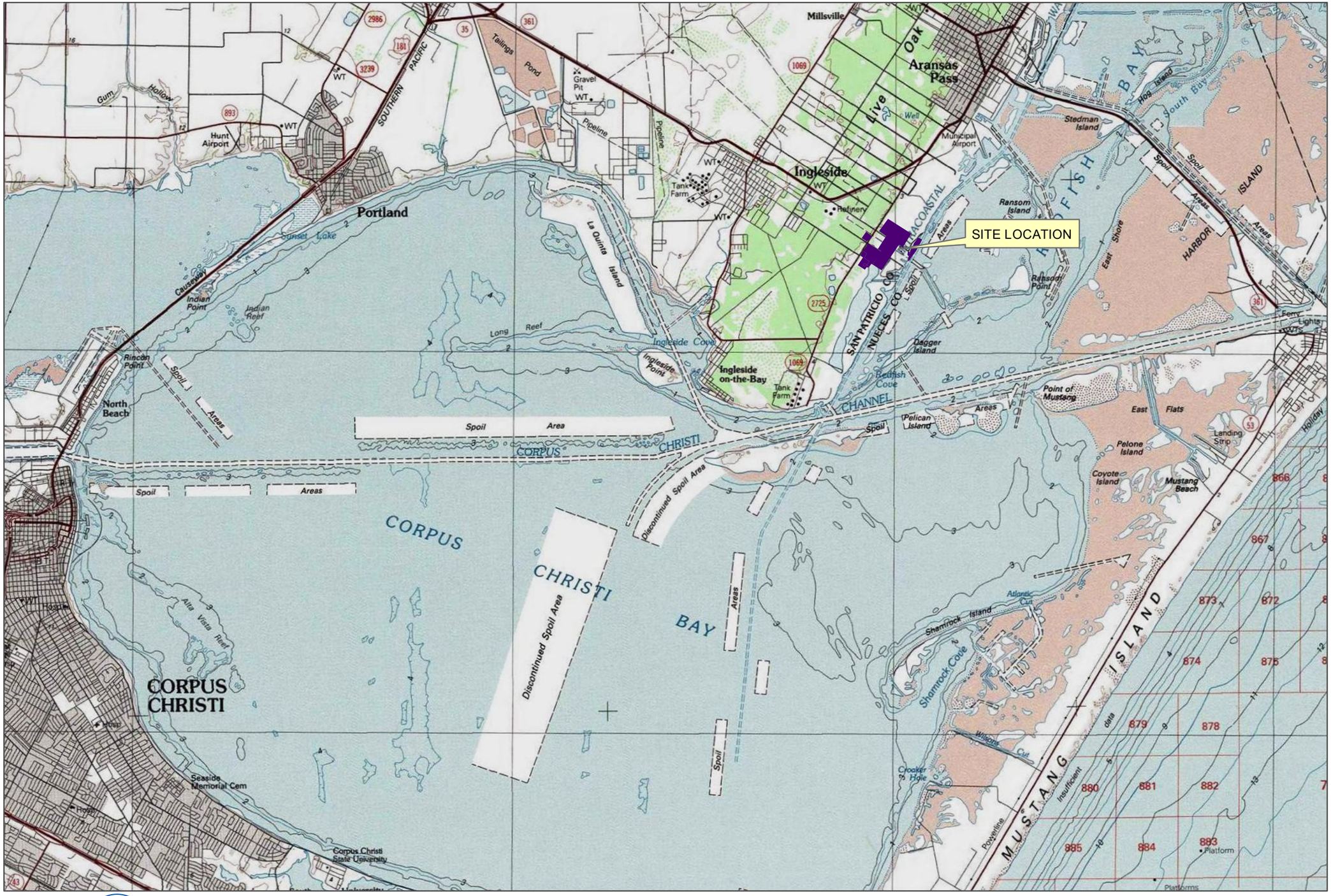

Image Source:
ESRI ArcGIS Online USA Topo Maps layer, 1:100,000 scale, Copyright:© 2011 National Geographic Society, i-cubed

Falcon Refinery Superfund Site
Ingleside, San Patricio County,Texas

Figure 1
Area Map
Site Management Plan

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N

0 250 500

Feet

Legend:

- Area of Concern Boundary

Active NORCO Pipeline

- Above ground
- Underground

Abandonded NORCO Pipeline

- Above ground
- Underground

Outside Operations

- Gulf South Pipeline
- Boss Pipeline
- Gathering Line 2'
- Plains Marketing Pipeline

Source: AOC and pipeline locations from TRC, dated, March 10, 2011

Image Source: 2009 Texas Orthoimagery Program, Texas Strategic Mapping Program, TNRIS, 2009

Falcon Refinery Superfund Site
Ingleside, San Patricio County,Texas

Figure 2
Site Map
Site Management Plan

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Appendix A
Pollution Control and Mitigation Plan

Pollution Control and Mitigation Plan
Remedial Investigation/Feasibility Study
Falcon Refinery Superfund Site
Ingleside, San Patricio County, Texas

EPA Region 6 Remedial Action Contract 2
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1. INTRODUCTION

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The purpose of this Pollution Control and Mitigation Plan (PCMP) is to summarize the requirements and procedures designed to protect the environment during RI field activities. These requirements and procedures pertain to:

- Storage and disposal of liquid investigation-derived waste (IDW) or decontamination water
- Handling, transportation, and disposal of solid IDW generated as part of the assessment activities.

This PCMP will be amended, as necessary, to ensure continued environmental protection at the site. The following sections provide procedures on discharge control (Section 2), control of chemical releases (Section 3); equipment and personal protective equipment (PPE) decontamination (Section 4), and emergency procedures (Section 5).

2. DISCHARGE CONTROL

This section discusses the requirements for controlling liquid and solid IDW generated during RI field activities. Liquid IDW will be generated during drilling operations, decontamination of sampling equipment and PPE, and other ancillary investigatory activities. Solid IDW generated during monitoring well installation and direct-push investigations of source vadose zone areas along with liquid IDW will be subject to disposal as appropriate.

Liquid and solid IDW generated during the RI field investigation will be managed as separate waste streams. Solid IDW from well installation and liquids from decontamination procedures will be drummed, labeled, stored in a designated waste storage area within the Support Zone, and then sampled. Following receipt of analytical data, a subcontracted waste disposal company will remove and transport the IDW to a proper disposal facility. EA will perform field-generated waste (e.g., IDW) characterization and disposal in accordance with local, State, and Federal regulations. Water from suspended sediment sampling that originates from a water body will be returned to the water body immediately downstream.

To mitigate the potential for discharge of IDW during RI field activities, the IDW storage area within the support zone will be secured and clearly marked to prevent the accidental discharge of IDW. While conducting intrusive activities that may create IDW (e.g., drilling operations) in or

near these sensitive areas, pollution control measures will be employed to mitigate unintentional discharge of IDW.

3. CONTROL OF CHEMICAL RELEASES

When an unplanned chemical or hazardous material release occurs, the Site Health and Safety officer (SHSO) will immediately identify the characteristics, source, amount, and extent of the released material. If the release involves chemicals, Material Safety Data Sheets (MSDSs) will be used to define the degree of hazard associated with the incident. MSDSs and shipping manifests will be maintained in the EA Site Manager's (SM) office.

The SHSO will help officials assess any incidents and implement any evacuation. Information provided by the SM will include, but not be limited to, the following:

- Name and telephone number of person reporting the incident
- Name and address of the incident location
- Time and type of incident (e.g., chemical release)
- Name and quantity of material(s) involved, to the extent known
- Extent of any injuries, if known
- Potential hazard to human health and the environment outside the site.

A reportable release, fire, or explosion that impacts offsite areas or has the potential to impact offsite areas will be reported to the appropriate administrative agencies. These agencies and contact numbers are as follows:

- Fire and police departments 911
- National Response Center 1-800-424-8802
- EPA 1-866-EPASPILL
- Environmental Emergencies Hotline (1-866-372-7745)
- Texas Emergency Spill Reporting 1-800-832-8224

4. EQUIPMENT AND PERSONAL PROTECTIVE EQUIPMENT DECONTAMINATION

Wastewater will be generated during the decontamination of sampling equipment and/or PPE. Decontamination shall be conducted in accordance with the site-specific Health and Safety Plan (HSP), the Quality Assurance Project Plan, and Field Sampling Plan. IDW will be temporarily stored (e.g., in drums) and later be transported for disposal. IDW will be disposed of in accordance with local, State, and Federal regulations. The Project Manager (PM) must approve the disposal method.

5. EMERGENCY PROCEDURES

The following telephone numbers are provided for emergency response activities:

- Emergency (fire, ambulance, or police) 911
- Non-emergency, San Patricio County Sheriff 1-361-364-2251
- Non-emergency, Ingleside Police Department 1-361-776-2531
- Non-emergency, Ingleside Fire Department 1-361-776-7422
- Poison Control Center 1-800-222-1222
- Care Regional Medical Center 1-361-758-8585

In case of an emergency that may cause harm to human health and the environment, the SHSO will implement the site emergency procedures specified in the HSP. As discussed in the HSP, the SHSO is responsible for the following specific activities:

- Implementing the site contingency plan, including ordering site evacuations, directing fire-fighting efforts, and directing spill control and cleanup

- Contacting and coordinating with local emergency services such as the fire department; ambulance services; and Federal, State, or local emergency or environmental agencies

- In the event of an airborne release of toxic materials, informing local authorities immediately to assess the need for evacuating the public near the site

- Determining the cause of the incident and how to prevent it in the future

- Filing necessary reports with Federal, State, and local authorities, and completing a written report for the EA PM.

The SHSO will work closely with the SM in the event of an emergency and will provide advice and support, as necessary. The SHSO will be responsible for the following additional activities in the event of an emergency:

- Evaluate the emergency conditions and make recommendations regarding:
  - Risks to offsite personnel and the public
  - Necessity of upgrading PPE to protect on-site personnel/emergency responders
  - Evacuation of onsite personnel

- Supervise evacuation and decontamination procedures

- Obtain first-aid services and medical support for injured or exposed personnel

- Contact EA PM as soon as possible regarding any accident or injury other than minor first-aid cases

- Prepare written incident report for submission to the SM and PM within 24 hours of the incident that will include items identified in the HSP.

If the SHSO is absent or incapacitated, the SM or designated alternate will assume the responsibility of the SHSO during the emergency. Onsite employees are responsible for: (1) reporting emergency situations or conditions immediately to their supervisors; (2) alerting other employees; (3) helping injured personnel only when their personal safety is assured; and (4) assisting as directed in the mitigation of the incident.

Neither the SHSO nor the subcontractors will order or conduct evacuations of the general public. The SHSO will make recommendations to the local emergency authority and assist when possible. However, the local agency in charge will decide whether evacuation is required. In the event of a fire or explosion, the local fire department will be summoned immediately. Upon his or her arrival, the SHSO or designated alternate will advise the fire commander of the location and nature of the incident and identify the hazardous materials onsite.

Spills of hazardous materials shall be corrected and controlled as soon as possible. Primary attention shall be given to the protection of life (on- and offsite), and the prevention of spill dispersion. Although, no spills are anticipated during RI field activities, any spills that occur will be cleaned up within the same workday period in accordance with proper procedures as directed by the HSP.

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Appendix B
Data Management Plan

Data Management Plan for
Analytical and Geographic Information System Data
Remedial Investigation/Feasibility Study
Falcon Refinery Superfund Site
Ingleside, San Patricio County, Texas

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1. INTRODUCTION

This Data Management Plan (DMP) describes the design, development, maintenance, and intended uses of the analytical and spatial databases for the Remedial Investigation/Feasibility Study (RI/FS) associated at the Falcon Refinery Superfund Site (site).

The purpose of this DMP is to define: (1) how a relational database management system (RDBMS) and Geographic Information System (GIS) are assembled and maintained; and (2) how each system can be accessed by Task Order personnel. The DMP also explains how the RDBMS attributes and GIS spatial components will interact to provide users with easy visual access to the vast amount of available data (e.g., laboratory data, survey data, etc.). Procedures for populating information stored in the RDBMS and GIS, and for linking the two systems are addressed in this DMP.

A comprehensive data management program is designed to ensure: (1) multiple information sources will result in similar data sets; and (2) data management practices will be adequate for the types of data processing required by a Task Order. All site team members will follow these protocols to ensure results have uniform units of measure, analytical methods, and reporting forms.

Section 2 describes the RDBMS analytical database design and functionality; software and hardware; procedures for database administration and implementation; and data retrieval, output, and use. Section 3 describes the GIS spatial database design and functionality, GIS hardware and software, procedures for GIS spatial database administration, coordination with the RDBMS, and GIS map generation.

2. RELATIONAL DATABASE MANAGEMENT SYSTEM FOR ANALYTICAL DATA

The following subsections provide an overview of environmental sampling and analysis and discuss relational database structure and function, software and hardware requirements, and processing of the analytical data into the database system.

2.1. ENVIRONMENTAL SAMPLING AND ANALYSIS OVERVIEW

The planning, collection, analysis, and reporting of chemical data for environmental samples are each complex processes, with many variables to track. The major steps in collecting and processing environmental chemical data, summarized below, define how the data are processed and stored in the database system. The main steps include:

- ***Site Investigation Planning***—There are various types of investigations (e.g., site reconnaissance, soil sampling, etc.) that will be conducted. Site investigation plans are developed to define the proposed sampling locations, sampling dates and times, matrices, sample depths, field sample naming conventions, numbers and types of field quality control samples (e.g., field blanks, field duplicates, trip blanks, etc.), proposed analytical methods, and required detection limits. The investigation plan information is useful to

the database administrator for planning the electronic data processing procedure and storage requirements.

- ***Establishing Data Quality Objectives***—A detailed data quality objective plan provides the laboratory with critical information regarding required methodologies, analyte lists, detection limits, and quality control specifications that must be met. This information is also useful to the database administrator for planning the electronic data processing procedure and storage requirements.

- ***Sample Collection***—Environmental chemical data associated with a given site investigation are typically collected at multiple sample locations and for multiple depths (e.g., 0 to 2 foot below ground surface [bgs]). A single sample may be collected in multiple containers required for various analytical methods. A single sample may also have various containers sent to multiple laboratories for specialized or confirmatory analyses. All field sampling information (i.e., field sample names, sample collection dates and times, and required analyses) are recorded on a chain-of-custody provided by the laboratory.

- ***Laboratory or Field Laboratory Analysis***—The laboratory or field laboratory data must meet all data quality objectives supplied by the client or otherwise necessary for decision-making. Data quality objectives may vary greatly on the level of quality control and level of reporting detail required for the Task Order. Samples may require re-analysis, dilutions, and analysis of internal quality control samples (i.e., duplicates, surrogate spikes, and matrix spikes). The laboratory applies many types of its own quality control processes and reviews, and finally reports the data with qualifiers and narratives describing any potentially deleterious situations involving method or sample analysis performance issues.

- ***Final Reported Data***—The client data quality objectives usually specify the level of detail reported to the client, including or excluding internal quality control results (e.g., laboratory duplicates, matrix spike recoveries, calibration verification, etc.). Data is provided to the client as hard copy reports and electronic data deliverables (EDDs). The client dictates the structure of the EDD.

- ***Data Validation***—This is an optional procedure required for most Task Orders. After the laboratory generates its final reportable results, in hard copy (and electronically), the laboratory data packages are submitted to independent data validators who perform a complete review of the data against all relevant data specifications and resolve issues such as multiple dilutions and/or multiple analyses supplied for the same sample. A final validated result and, if necessary, one or more qualifiers are supplied for each sample and its analytes. The Task Order may require storage of unvalidated and/or validated data.

- ***Final Data Storage***—The EDDs, particularly unvalidated EDDs, may be reviewed against the chain-of-custody sheets, project plan, data quality objectives, or other external master lists to verify data completeness. The Project Manager must supply additional

information that is not included in the EDD, but is associated with the field samples. Additional information to be supplied includes:

- ***Sample Location***—Location codes, areas of concern, location types, or categories
- ***Sample Descriptors***—Field duplicate identities, depths, detailed matrix codes, sample types (e.g., normal, field duplicates, rinse blanks, etc.), and sample details (e.g., sieved, background, etc.)
- ***Data Reduction Policies***—Policies regarding if and/or how to store dilutions, re-analyses, unvalidated and validated data, confirmation data, multiple methods for the same sample and analyte, and laboratory quality control sample analysis results.

2.2. RELATIONAL DATABASE STRUCTURE AND FUNCTION

The following subsections discuss database structure, function, and objectives.

2.2.1. Structure

The relational database structure for storing sample and chemical data consists of a series of related data tables. Relational database structures are the most efficient way to store complex data. The main features of relational databases are:

- Data are stored in separate tables, such as tables for locations, samples, analytes, methods, tests, etc.
- Some tables function as reference tables to enforce standardization of defined values (e.g., method names, analytes, concentration units).
- The individual data tables link in parent-child relationships (e.g., a table of parent locations links to a table of many child field sample records). Parent-child field relationships are enforced via indexed key fields to ensure that all child records are assigned to parent table records, thus eliminating the possibility of "orphaned" records. All parent-child tables are linked via unique indexed numeric keys.
- Each table has index keys and field constraints assigned to ensure that each record is unique, thus eliminating accidental storage of duplicated information in any table.
- Relational databases provide enormous flexibility in querying, summarizing, analyzing, exporting, and reporting large quantities of data.

A typical analytical database contains 22 tables as follows: (a) 16 reference tables that store standardized values, and (b) 6 data tables that store the related site, location, sample, testing, results, and screening value data. Table 1 presents a summary of the potential data tables. Figure 1 presents a general schematic of the potential database tables and relationships.

Table 1 Summary of Potential Relational Database Tables

Table	Contents	Relationship Notes
Action Limits	Stores the screening concentrations and units for each action limit type.	
Action Limit Types (Reference)	Reference list of action limit types such as for human health screening.	
Analyte Group Type (Reference)	Reference table that stores analyte groups to which individual analytes may be assigned.	
Analysis Methods (Reference)	Reference list of analytical method names used by the laboratory.	
Analyte List (Reference)	Reference list of chemical analyte names, includes no chemical field parameters, along with Chemical Abstract Services number and other analyte codes.	
Laboratories (Reference)	Reference list of laboratories or other subcontractors and their contact information.	
Laboratory Type (Reference)	Reference list of laboratory types to allow indication of offsite, field, mobile, etc.	
Location Points	Stores all sampling point location information (e.g., primary site, location types, location groups, or areas of concern).	Parent table of samples, child table of sites
Location Areas (Reference)	Reference list of location "areas" that may be used to group sampling location points.	
Location Type (Reference)	Reference list of sample location point types.	
Matrix Types (Reference)	Reference list of matrices (e.g., soil, water, etc.) that may be assigned to field samples.	
Matrix Group (Reference)	Reference list of matrix groups that may be used to group specific matrices.	
Preparation Methods (Reference)	Reference list of sample preparation method names used by the laboratory.	
Analysis Results	Stores the actual result detail for each unique sample and test. The results details include the reported result, units, various qualifiers, validated status, various detection limit types, detection flags, reportable status, and result type.	Child table of sample tests
Result Types (Reference)	Reference list of result types.	
Sites	Stores the primary sites included in a Task Order to which location points may be assigned.	Parent table of location points
Samples	Stores all sample information, such as field sample name, location point, depth, collection date/time, matrix, sample type (e.g., field duplicate, trip blank, matrix spike, etc.), sampling task. Also stores non-field samples (i.e., laboratory duplicates, matrix spikes, and other quality control samples).	Parent table of sample tests, child table location points

Table	Contents	Relationship Notes
Sample Tests	Stores the unique combination of the sample and analysis method performed on a given date/time as a "sample test." Includes the test information such as analysis and preparation dates/times, laboratory, analyst, batch, laboratory sample identification, sample delivery group, dissolved/total indicator, test type, laboratory report, chain-of-custody, etc.	Parent table of analysis results, child table of samples
Sample Type (Reference)	Reference list of sample types.	
Sampling Tasks (Reference)	Reference list of sampling tasks to allow grouping of samples into sample events, such as "2007-January."	
Test Types (Reference)	Reference list of analysis test types used to indicate re-analysis, dilutions, confirmations, etc.	
Concentration Units (Reference)	Reference list of concentration units used for results.	

2.2.2. Function and Objectives

Database structure and relationships address the following key data integrity issues:

- The critical quality of the database is that it must be flexible enough to allow storage of all desired results, without allowing duplicated records to be stored accidentally. The database must be able to accommodate data from other databases and external files.

- Each table has a combination of fields that are required to be unique. For example, the samples table will not allow the same point location, matrix, sample type, sample depth, and sample date/time to be entered more than once, otherwise this would be the same sample entered again.

- The database has built-in safeguards to prevent deleting parent data that have associated child data, or adding child data that do not have a parent record.

- The use of reference tables forces method names, chemical names, units, and other standardized items to remain consistent throughout the database records.

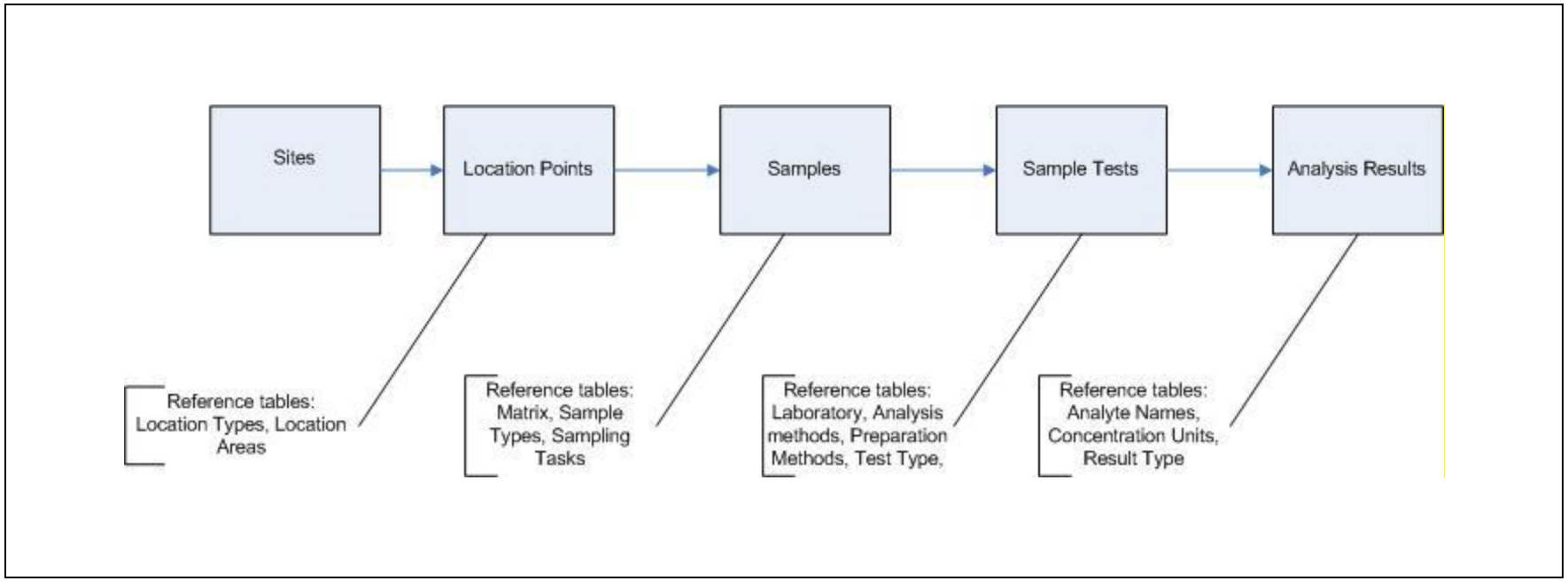

Figure 1 Schematic of Potential Database Tables and Relationships

2.3. SOFTWARE AND HARDWARE REQUIREMENTS

The following subsections discuss software and hardware requirements.

2.3.1. Defining the Requirements

The relational database system will be established as a desktop database, which requires a prime database administrator to maintain and populate the database and make modifications, if necessary. In general, the primary qualities of a desktop database are as follows:

- Requires database software for any users and administrators
- Database file is portable and easily copied
- Database may be located on any network or local computer
- Allows multiple users, generally those with local access to the network
- Data back-up is dependent on network back-up or manual back-up
- Although security features are available, the desktop database is not as secure as a server database
- May not be suitable for extremely large sets of data
- Easier to maintain, but easier to corrupt
- Has built-in features for building queries, forms, modules, and reports
- Integration is possible with other desktop applications (e.g., Excel).

2.3.2. EA Standard Software

EA utilizes Microsoft Access as its primary desktop database system. The version of database software currently used by EA is Microsoft Access 2007.

2.4. PROCESSING OF ANALYTICAL DATA INTO DATABASE SYSTEM

The cornerstone of importing and storing chemical analysis data is the laboratory EDD file that contains the data. The EDD is a simple, flat data file, typically in Microsoft Excel or delimited text format. However, the EDD will not contain all of the necessary Task Order information (e.g., sample location and site, field sample duplicate identities, sample depths, etc.). Successful data processing relies on integrating the EDD and external information for import to the database. The Project Manager is responsible for supplying the necessary external information.

There are also many decisions to make regarding the level of data review and completeness checking of the EDD. The basic steps involved in processing the sample data are as follows:

- Establish EDD field definitions and delivery requirements with the laboratory
- Determine level of EDD/data review with the Project Manager
- Obtain other necessary Task Order information from the Project Manager
- Review/refine import automation and coding for each Task Order
- Generate import summary report to confirm import.

Each of these steps are discussed in detail below.

2.4.1. Establish Electronic Data Deliverable Structure and Contents

A suggested example EDD is presented in Table 2. After the EDD structure is established the Project Manager will have to address several questions regarding actual data delivered and how it will be stored:

- Determine if the EDD will contain all dilutions and re-analyses: If the EDD will have dilutions and re-analyses, the data manager will have to "reduce" the EDD data to select the final result to be used if multiple results are available for a given sample and analyte.

- Determine if the Task Order will require validated EDDs: Validated EDDs will have diluted and re-analysis results flagged to indicate the final result to use. Will the Task Order require storage of both validated and iuvalidated EDDs?

- Should the EDD data contain only field samples, or will any of the following be included:
  - Matrix spikes
  - Laboratory duplicates
  - Surrogate recoveries
  - Laboratory control data (e.g., laboratory blanks, calibration, laboratory control samples)
  - Tentatively identified compounds.

- What are the final concentration units to be used in the database?

- Will there be the same analytes analyzed by more than one type of method (e.g., laboratory analysis)?

- Will non-detected data be reported to the method detection limit or reporting limit?

The Project Manager may require other EDD contents for final storage in the database. Proper planning of the EDD structure and contents is a key first step.

Table 2 Example Electronic Data Deliverable File and Data

Columns 1 to 12:

REPORT	LAB_SAMPID	SAMP_TYPE	DIL_FACTOR	FLD_SAMPID	SAMPLE_DATE	REC_DATE	EXT_DATE	ANAL_DATE	LAB_MATRIX	MOISTURE	WET_DRY
C5L190133	L99546	N	1	ABC-1	12/16/2005	12/17/2005	12/21/2005	12/22/2005	SOIL	18	WET
C5L190133	L99546	N	1	ABC-1	12/16/2005	12/17/2005	12/17/2005	12/21/2005	SOIL	18	DRY
C5L190133	L99546	N	1	ABC-1	12/16/2005	12/17/2005	12/17/2005	12/21/2005	SOIL	18	DRY
C5L190133	L99546	N	1	ABC-1	12/16/2005	12/17/2005	12/17/2005	12/21/2005	SOIL	18	DRY

Columns 13 to 23:

AN_METHOD	PREP_METHOD	ANALYTE	CAS_NUMBER	TOT_DISS	LAB_RESULT	QUAL	REP_LIMIT	MDL	UNITS	BATCH_ID
WW 160.3 MOD	160.3 MOD	PERCENT SOLIDS	Q1082	N	82			0	%	5355308
ILM05.4	SW846	LEAD	7439-92-1	N	25	J	50	50	MG/KG	5357419
ILM05.4	SW846	LEAD	7439-92-1	N	300		50	50	MG/KG	5357419
ILM05.4	SW846	LEAD	7439-92-1	N	1200		100	50	MG/KG	5357419

2.4.2. Electronic Data Deliverable Review

The Project Manager must determine what level of review is required for the EDDs. The level of quality control can range from a full completeness check to a simple check for redundant data prior to import. Even validated EDDs may have issues that require review.

For a completeness check, the Project Manager must supply a list of all expected samples, methods, analytes, and detection limits. Ideally, this information is loaded into an external electronic file and used to check the EDD for completeness.

If the EDD contains dilutions and re-analyses, and is not being validated to reduce the results, the data manager must confirm with the Project Manager which results should be selected as final.

The Project Manager will supply a list of expected field samples that define the locations, areas of concern, sample types, matrices, depths, sampling dates, and any other information required to be stored in the database that relates to the samples. This external list is used to check handwriting transcription errors that occur between the chain-of-custody and the laboratory data system; it is common for the letter "O" and zeros to be confused, or the letter "S" to become a number "5." Only a manual check of the names to a master list can identify these issues.

The EDD must be reviewed to locate any situations where the same sample, same method, and the same analyte are reported more than once (i.e., duplicate analytical results). It also must be screened for missing data.

If any problems are encountered with the EDD, the laboratory must be contacted. The EDD must be corrected and re-issued from the laboratory. The hard copy laboratory report must also be reviewed.

2.4.3. Obtain Project Sample Information

The laboratory EDD will not contain all of the necessary sample information. Field sample names may range widely in the encrypted information they contain. Some field sample names may indicate location point, depth, and matrix, or other samples may have a coded system of numbers that require external information to extract the location, depth, and matrix information. The identity of field duplicates is not given in the EDD. There may be additional location coordinate information or special sample "categories" that need to be addressed during storage.

The external information is captured in an electronic file that is later combined with the EDD for import into the database.

2.4.4. Review and Refine Import Automation

After the EDD has been reviewed and the additional information from the Project Manager has been gathered, the import process may begin. Because the database consists of a series of related parent and child tables, the data in the EDD must be imported in the proper order: site, location, samples, sample tests, and results.

In addition to the order, all of the reference values must be checked for standardization in each table. For example, the analyte names must be in the analyte reference list, the concentration units must be in the unit reference list, the methods must be in the method reference lists, etc. If a value not in a list is found, it must be determined if the item is a new one that must be added to the reference list, or if it is a spelling error or variation of an item already on a reference list.

The import process is an automated sequence of events that may be refined to accommodate the details of each Task Order. In general, the import process must address several general issues:

- Import data in order to each parent and child table
- Check fields for reference values where relevant
- Add new values to reference tables when needed
- Identify missing required values
- Identify duplicated information
- Incorporate external sample information (non-EDD sample information).

2.4.5. Confirm Data Import

After the data are imported into the database, a summary report is generated to ensure the proper number of results have been stored for the imported EDD. The summary includes the sample identities, test methods, and number of results for each test. A detailed report can also be generated if a greater level of detail is to be checked.

3. GEOGRAPHIC INFORMATION SYSTEMS

GIS has proven to be a vital tool in the management and analysis of spatial data collected for a wide range of Task Orders. Sources of information that can be integrated and managed in a GIS are

- tables of Global Positioning System data
- computer-aided design drawings, images, and surface models
- electronic documents
- scanned hard copy documents

GIS allows this information to be queried, processed, and analyzed, assisting users with interpreting data and presenting their findings visually in reports, public relation events, and meetings.

3.1. GEOGRAPHIC INFORMATION SYSTEM DATA FORMAT

Spatial data are segregated into individual feature layers, which are collections of points, polylines, polygons, or grids. A point layer could contain a collection of monitoring wells, a polyline layer could represent a stream, a polygon layer could be a collection of buildings, and a grid could represent a surface elevation model. By placing spatial data in this format, GIS can extrapolate data from each layer, either by query or by advanced spatial analysis techniques (e.g., feature buffering, polygon overlay, surface modeling of numeric data, and proximity analysis).

Feature layers store attribute data as part of their design. Attribute data consist of geometry calculations such as length for polylines, area for polygons, and coordinates for points. Additionally, any feature or Task Order-specific descriptive attributes associated with individual features can be stored within the feature layer or in tables linked to the feature by a unique identifier.

Feature layers are formatted to the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE). SDSFIE format provides a standardized scheme for attributes and databases to which all GIS layers must adhere, thereby ensuring compatibility. This format dictates the specifications and structure for attribute tables and fields that are associated with the geometric features (e.g., buildings, wells, wetlands, etc.). The SDSFIE standard is compliant with the Federal Geographic Data Committee, which is responsible for developing the Content Standard for Digital Geospatial Metadata. This ensures that Task Order GIS data remain compatible with Federal GIS requirements.

3.2. GEOGRAPHIC INFORMATION SYSTEM DATA STORAGE

Feature layers can be stored in several formats depending on the complexity of the site, the data to be collected, and the number of users processing data. Each format contains the geometry and attributes data that are associated with each feature. The formats, discussed in detail below, are shape files, coverages, and feature classes.

3.2.1. Shape Files

Shape files are the most basic format used to store GIS data. Each layer is comprised of several files, which contain the geometry, attribute data, and a link between the data and geometry for each feature.

3.2.2. Coverages

Coverages consist of a combination of system directories containing sub-files, which hold geometry, attribute data, and projection information.

3.2.3. Feature Classes

Feature classes are the format in which layers are stored in a geo-spatial database. When imported into a geo-spatial database, shape files and coverages become feature classes. Feature classes will be stored in a personal geo-database, which is a desktop relational database that stores multiple feature classes, tables, and images. Personal geo-spatial databases allow only one user at a time to access the database and have a limit on how large they can grow, with performance decreasing as the size of the database increases.

3.2.4. EA Standard Software

EA uses Environmental Systems Research Institute, Inc. (ESRI) software as its standard GIS software (i.e., ESRI ArcGIS Desktop 10.0). ESRI is an industry standard for GIS and spatial data systems, which can store and access data.

3.3. ACCESSING GEOGRAPHIC INFORMATION SYSTEM DATA

End users will access GIS data through a desktop application. A prime GIS administrator will maintain the GIS data and will make modifications if necessary. In general terms, the main qualities of a desktop GIS application are as follows:

- Requires GIS software for any users and administrators
- GIS data must be located on a network accessible by all users or must be easily transferred
- Users can easily view and process data
- Users can perform complex procedures such as spatial analysis, modeling, and cartographic output.

Appendix C
Air Quality Monitoring Plan

Air Quality Monitoring Plan
Remedial Investigation/Feasibility Study
Falcon Refinery Superfund Site
Ingleside, San Patricio County, Texas
EPA Identification No. TXD086278058

Remedial Action Contract 2 Full Service
Contract No.: EP-W-06-004
Task Order: 0088-RICO-06MC

Prepared for:

U.S. Environmental Protection Agency
Region 6
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October 2012
Revision: 00
EA Project No. 14342.88

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1. INTRODUCTION

EA Engineering, Science, and Technology, Inc. (EA) has been authorized by the U.S. Environmental Protection Agency (EPA), under Remedial Action Contract No. EP-W-06-004, Task Order 0088-RICO-06MC, to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Falcon Refinery Superfund Site (site).

2. PURPOSE

The purpose of this Air Quality Monitoring Plan (AQMP) is to provide protocols associated with air sampling for contaminants of potential concern (COPC), which are benzene, naphthalene, thallium, arsenic, and lead.

This AQMP addresses the following regulations and guidance documents:

- Occupational Safety and Health Administration (OSHA) Standards for General Industry, 29 Code of Federal Regulations (CFR) 1910
- OSHA Standards for Construction Industry, 29 CFR 1926
- National Institute of Occupational Safety and Health, OSHA, EPA, and U.S. Coast Guard *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities,* October 1985.

One copy of this AQMP will be maintained for use during the entire duration of field activities and made available for site use/employee review at all times.

3. CHEMICAL HAZARDS

This section identifies known chemical hazards at the site. The air samples collected at the site will be analyzed for volatile organic compounds (VOCs). It is not anticipated that chemical concentrations will exceed action levels for worker exposure. The most likely route of exposure to VOCs is inhalation. The most likely route of exposure to the other COPCs is dermal contact. Therefore dermal protection (nitrile gloves) will be worn when handling or contacting decontamination chemicals and environmental media (water and sediments). In addition, eye protection will be worn to minimize potential dangers associated with splashing.

Assumptions regarding potential chemical constituents were based on information from past investigation activities conducted at the site. The primary COPCs detected in sediment, soil, surface water and ground water at the site were benzene, naphthalene, thallium, arsenic, and lead. Any newly identified constituents detected from the sampling activities will be evaluated and, if required, this AQMP will be amended to address any new chemical hazards. In the absence of sufficient data to show it is not necessary, the concept of "Universal Precautions" will be followed, assuming that all potential COPCs are present while sampling. However,

concentrations detected are relatively low, and the likelihood of adverse health effects should be considered equally low.

Potential chemical hazards and their evaluation are provided in Table 1.

Table 1 Chemical Hazard Evaluation

Compound	Exposure Limits (Time-weighted Average)		Routes of Exposure	Symptoms (Acute)	Dermal Hazard
	Permissible Exposure Limit	Threshold Limit Value			
Benzene	1 ppm	0.5 ppm	Inhalation, ingestion, and skin absorption	Eye, nose, respiratory system irritation, impairment of hearing, central nervous system disturbances, giddiness, headache, nausea, staggered gait, fatigue	Yes
Arsenic	0.010 mg/m^3	0.010 mg/m^3	Inhalation, skin absorption, ingestion, skin and/or eye contact	Headaches, confusion, sleepiness, convulsions, gastrointestinal disturbances, vomiting, diarrhea, respiratory irritation	Yes
Thallium	0.10 mg/m^3	0.10 mg/m^3	Inhalation, skin absorption, ingestion, skin and/or eye contact	nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus (drooping eyelids); peri neuritis (inflammation, degeneration, or demyelinization of the optic nerve), tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea (involuntary muscle contractions), psychosis; liver, kidney damage; alopecia (hair loss); paresthesia (burning or prickling sensation) legs	Yes
Lead	0.050 mg/m^3	0.050 mg/m^3	inhalation, ingestion, skin and/or eye contact	lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation	Yes

Compound	Exposure Limits (Time-weighted Average)		Routes of Exposure	Symptoms (Acute)	Dermal Hazard
	Permissible Exposure Limit	Threshold Limit Value			
				eyes; hypertension	
Naphthalene	50 mg/m^3	50 mg/m3	inhalation, ingestion, skin and/or eye contact	irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage	Yes

NOTE:
OSHA Permissible Exposure Limit (PEL) – Time-weighted average concentration for up to an 8-hour workday during a 40-hour work week.
NIOSH Recommended Exposure Limit (REL) – Time-weighted average concentration for up to a 10-hour workday during a 40-hour work week.
OSHA PELs were adjusted to provide site-specific exposure levels for a TWA 10-hour workday.
Exposure Limits will also include the evaluation of site-specific background contributions, which will be determined onsite.

mg/m^3	milligram(s) per cubic meter
ppm	part(s) per million
µg/m^3	microgram (s) per cubic meter
NA	not available

4. ENVIRONMENTAL MONITORING

Environmental monitoring will be conducted because some VOCs may become airborne. Should odors be detected during the course of sampling, attempts will be made to monitor the vapors. Only employees, who have been trained in the proper operation, use limitations, and calibration of the monitoring equipment will operate instruments. Direct-reading instruments will be calibrated prior to use on a daily basis with a known concentration of calibration gas following the instrument manufacturer's guidance. Calibration will be properly recorded in the field logbook to show the date, calibration material type and concentration, and the actual reading obtained. Equipment failing to meet the manufacturer's standards for accuracy and repeatability will be considered suspect and replaced with an alternate, properly functioning piece of equipment. Instructions in the manufacturer's operations manual regarding storage, cleaning, and maintenance of the instruments will be followed.

4.1 Personal Air Sampling

Employees working near a source of contamination have the highest likelihood of exposure to airborne contaminant concentrations, which may exceed established exposure limits. Therefore, selective monitoring and sampling of the environment around these workers will be conducted during site activities.

Breathing zone air monitoring and sampling will be performed at least twice for each project task to ensure worker protection. Operations at the site may result in variable background levels of airborne contaminants. Therefore, upwind and background measurements will be taken to assess contributions to airborne contamination by other potential sources.

4.2 Air Sampling Protocols

Breathing zone sampling will be conducted onsite with a Photoionization Detector (PID). Samples will be collected from representative employee(s) performing various tasks within the exclusion (contaminated) zone and background at the site. Results from the personal air sampling will be compared to the applicable OSHA permissible exposure levels (PEL) for the COPCs.

Upon receipt of sample results within a few days of sampling, the Site Health and Safety Officer (SHSO) will evaluate the data against the applicable OSHA PEL. If the data indicate that airborne concentrations are less than half of the PEL, the SHSO may discontinue personal air sampling activities.

Appendix D
Field Change Form

CONTRACT FIELD CHANGE FORM

Project Name	Document Name	Task Order No.
Falcon Refinery Superfund Site	**Field Change Form No. 1**	**0088-RICO-06MC**
Contract No. **EP-W-06-004**		**Date**

Scope of Work for Field Change Form:

Reason for Action:

COST DATA

Item Description (attach specifications, if necessary)	Estimated Quantity	Unit	Unit Rate	Line Item Total
			Original Reserve Funding	
			Subtotal for this field change form	
			Plus total for all previously submitted field change forms	
			Balance of Original Reserve Funding (upon approval of field change form)	
			G&A (11.43% of Non-Labor Subtotal for this field change form)	

Schedule Impact (Calendar Days):

SIGNATURES

Not Applicable		
Resident Engineer	Financial Manager	Project Manager
Date	Date	Date